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IAEA Lays Out Iran Weapons Suspicions

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The International Atomic Energy Agency (IAEA) last month provided the most extensive details to date regarding suspicions that Iran has engaged in activities to develop a nuclear warhead. The details in the Nov. 8 report suggest that Iran pursued a range of activities relevant to nuclear weapons development as part of a structured program prior to the fall of 2003 and has resumed some weapons-related activities since then.

In response to the report, the 35-member IAEA Board of Governors adopted a resolution Nov. 18 expressing "deep and increasing concern about the unresolved issues regarding the Iranian nuclear program." The resolution also said that it was essential that Iran provide the IAEA with "access to all relevant information, documentation, sites, material, and personnel" to resolve all outstanding issues relating to Iran's nuclear work.

In his Nov. 17 opening remarks at the board meeting, IAEA Director-General Yukiya Amano said he has proposed to Iran that the agency send a high-level mission to clarify the weapons-related activities identified in the report. Also that day, an Obama administration official told *Arms Control Today* that "it will not be the United States or any other national government that judges if Iran has done what it needs to do" to resolve concerns about its past activities. The IAEA "can give Iran a clean bill of health so long as Iran commits to genuine cooperation," the official said.

The board resolution avoided the direct censure contained in some prior resolutions and did not declare Iran in noncompliance with its nonproliferation obligations, as the governors did in 2005 following a finding that Tehran had failed to declare certain nuclear activities to the agency.

Diplomats said that Western governments had sought a strongly worded resolution but China and Russia had objected in negotiations over the draft. The resolution the board adopted was submitted by the five permanent members of the Security Council (China, France, Russia, the United Kingdom, and the United States) and Germany, which have been engaged in off-and-on negotiations with Iran over the nuclear issue.

The resolution was adopted by a vote of 32-2, with Cuba and Ecuador opposing it and Indonesia abstaining. Brazil, Egypt, and South Africa voted in favor of the resolution after abstaining during the last IAEA resolution rebuking Iran in 2009, following revelations of a secret uranium-enrichment facility, named Fordow, that Iran was constructing near the city of Qom. (See *ACT*, December 2009.)

Responding to the November resolution, Iranian IAEA envoy Ali Asghar Soltanieh told reporters it would only result in "strengthening the determination" of Iran to pursue its "peaceful" nuclear program. "We will not suspend our enrichment activities and our work for even a second," he said, referring to Security Council demands that Iran temporarily halt all uranium-enrichment activities as a confidence-building measure.

Soltanieh said Iran would "study" Amano's proposed high-level mission, but rejected the possibility of such a visit in the near term because "everything is messed up by the director-general's decision" to publish the report.

Information Seen as Credible

The information on Iran's suspected warhead development program, contained in a rare 12-page annex to the agency's quarterly report, was largely based on more than 1,000 pages of documentation. Over the past several years, the IAEA has referred to these documents as the "alleged studies." A Western intelligence agency is believed to have acquired them from the wife of an Iranian involved in Iran's nuclear program.

The report said that additional information came from "more than ten" countries and the IAEA's own investigation, which included satellite imagery analysis, information provided by Iran, and discussions with members of the nuclear trafficking network led by Pakistani nuclear official Abdul Qadeer Khan. Khan's network provided Iran with key components and expertise for its nuclear program.

The agency concluded that the information describing Iran's suspected warhead development work is "credible," as it comes from "a wide variety of independent sources" and "is overall consistent in terms of technical content, individuals and organizations involved, and time frames." Amano said in his opening remarks to the board that the information the IAEA received "passed rigorous agency scrutiny."

In the Nov. 17 interview, the administration official said the IAEA wanted to wait "until it had assured itself that it had undertaken a thorough investigation and explored every angle regarding the serious charges against Iran" before making the information public.

Describing Iran's response to questions about the suspected weapons-related activities, the report said that Iran's answers "have been imprecise and/or incomplete, and the information slow in coming and sometimes contradictory." According to the IAEA, Iran has not cooperated with its investigation into the weapons allegations since 2008.

Although Iran has previously admitted to carrying out some of the work detailed in the report, it says the work was not for nuclear weapons and that many other allegations are fabricated.

Wide Range of Weapons Activities

According to the report, the weapons-related activities Iran allegedly pursued relate to "three technical areas" encompassing many of the steps in a nuclear weapons development process. The administration official said, "[I]t is impossible to read this report and the chilling details it provides on Iranian research into almost every facet of a nuclear weapons program and not come away with the conclusion that Iran is, at the very minimum, leaving open the option to pursue a weapon down the road."

The first technical area the IAEA describes was a covert uranium-conversion effort called "Project Green Salt," aimed at producing uranium hexafluoride, an early precursor in producing nuclear fuel or fissile material for nuclear weapons. The report said that documentation received from member states suggests that this project was part of an effort to produce uranium metal for use in a nuclear warhead.

Tehran has admitted to receiving a document from the Khan network that describes how to turn uranium compounds into uranium metal, but claims that it did not request it. The IAEA report said this document was known to be part of a larger package that included a "nuclear explosive design," based on its investigation into the Khan network's dealings with Libya. A member of the Khan network told the agency in 2007 that Iran had received nuclear explosive design information, and the agency said in the November report that based on that discussion, it "is concerned that Iran may have obtained more advanced design information" than what Libya received.

The most extensive detail in the report related to the second area of study: high-explosives work suitable for a nuclear warhead. This work included the development of fast-acting detonators and the means to position and fire high explosives simultaneously. The agency said that it was informed by nuclear-weapon states that the specific multipoint-initiation system used in Iran's high-explosives work "is used in some nuclear explosive devices."

When the agency confronted Iran in 2008 with some of the information it had on Iran's suspected high-explosives work, Iran said that it did not understand the information and had not carried out any of the activities, the recent report said.

According to the report, the IAEA "has strong indications" that Iran's development of a nuclear weapons-relevant high-explosives initiation system was assisted by a "foreign expert." It indicated that a member state informed the agency that the expert "worked for much of his career" in the Soviet nuclear weapons program.

The Washington Post identified the expert Nov. 10 as Vyacheslav Danilenko, who is currently an expert in using advanced explosives technologies to create industrial-use nanodiamonds. The IAEA confirmed through discussions with Danilenko that he was in Iran between 1996 and 2002 assisting with nanodiamond production using high-explosive techniques, the report said.

The third technical area described in the report covered the development of a nuclear warhead capable of fitting on Iran's medium-range Shahab-3 ballistic missile. Known as "Project 111," this work allegedly included computer modeling studies of various payloads for Iran's Shahab-3 missile consistent with a nuclear warhead and the manufacture of prototype re-entry-vehicle components at workshops known to exist in Iran.

The agency carried out a technical assessment of the study with the assistance of experts from countries that did not provide the IAEA with information related to Project 111. That assessment ruled out any payload option other than a nuclear weapon. Asked to comment on the results of the assessment in 2008, Iran told the agency that it agreed such a program would constitute nuclear weapons development, the report said. However, Tehran has dismissed the computer modeling documentation as "an animation game" and said that the electronic format of the documentation could have easily been fabricated.

Program Halted in 2003

According to the report, Iran consolidated the activities related to these technical areas under an umbrella called "the AMAD Plan," headed by an individual named Mohsen Fakhrizadeh, and most AMAD Plan activities were carried out between 2002 and 2003. The agency further notes that "senior Iranian figures featured" in the command structure of the AMAD Plan "at least for some significant period of time." The report does not identify the senior Iranian figures or their role in the Iranian leadership.

An annex to a May 2008 report by the agency outlined Iran's suspected covert conversion, high explosives, and re-entry vehicle activities, but not in the same detail. The agency has said that it continued to receive new information from states after 2008 on Iran's suspected weapons-related activities.

Based on information the agency received from members states, the report says that "work on the AMAD Plan was stopped rather abruptly pursuant to a 'halt order'" by senior Iranian officials in late 2003. However, it adds that some of the work carried out under the AMAD Plan was resumed later, with Fakhrizadeh maintaining "the principal organizational role" for those activities under different military and academic institutions.

The finding appears to be consistent with that of the unclassified summary of a 2007 National Intelligence Estimate (NIE) by the U.S. intelligence community. That assessment judged "with high confidence" that Iran had halted its nuclear weapons program in the fall of 2003 and concluded "with moderate confidence" that the halt lasted through mid-2007. The NIE defined Iran's nuclear program as covert uranium conversion- and enrichment-related activities and "weaponization work." The intelligence community completed a classified update of the 2007 NIE earlier this year. (See *ACT*, March 2011.)

The IAEA report and the NIE, however, pointed to different rationales behind the halt. According to the NIE, the U.S. intelligence community believed the halt "was directed primarily in response to increasing international scrutiny and pressure resulting from exposure of Iran's previously undeclared work."

Iran's key nuclear facilities capable of producing material for nuclear weapons were first publicly revealed in the fall of 2002 and came under IAEA safeguards shortly thereafter.

The recent IAEA report, however, said that the halt to the AMAD Plan was the result of "growing concerns about the international security situation in Iraq and neighbouring countries at that time."

The agency identifies three areas in which Iran is believed to have continued weapons-related work. The report said that information provided by one country indicated that Iran initiated a four-year program in 2006 to continue work on a neutron initiator. Such a device is used in the center of a nuclear weapon to generate a burst of neutrons and initiate a nuclear explosion. According to the IAEA, the neutron initiator Iran allegedly worked on matches the warhead design information the Khan network shared with Iran.

Information the agency received from two member states suggested Iran carried out modeling studies on nuclear warhead design in 2008 and 2009, including determining the nuclear explosive yield, the report said. Because the application of such studies appears unique to nuclear weapons, the IAEA said that "it is therefore essential that Iran engage with the agency and provide explanation."

According to the report, two countries told the IAEA that Iran conducted "experimental research" on scaling down and optimizing a nuclear weapons-relevant high-explosives package after 2003.

The report says, however, that the IAEA's understanding of Iran's post-2003 nuclear weapons-relevant activities is not as substantial as its assessment of the AMAD Plan "due to the more limited information available to the agency."

New Enrichment Plant

The report continued to detail Iran's safeguarded nuclear activities, citing developments relating to Iran's uranium-enrichment program. Iran prepared to begin operations at the Fordow enrichment plant last month after moving some of the low-enriched uranium (LEU) there from its commercial plant at Natanz.

The LEU produced at Natanz is enriched to about 4 percent of the fissile isotope uranium-235, a level generally used in nuclear power reactor fuel. Iran declared earlier this year that it would use the Fordow plant to triple its production of 20 percent-enriched uranium in order to fuel a research reactor in Tehran and additional reactors it intends to build. Western governments and independent experts have raised concerns that the accumulation of 20 percent-enriched uranium provides Iran with material that can easily be further processed to weapons-grade levels, which is about 90 percent enriched.

According to the IAEA report, Iran has begun testing a prototype fuel rod at the Tehran Research Reactor. U.S. and former IAEA officials have said, however, that Iran cannot safely manufacture fuel for the reactor.

The administration official said that "an Iranian initiative to cease the production of near 20 percent-enriched uranium and halt its ongoing construction at the underground Qom facility would be the most significant steps Tehran could take to signal that it is searching for a way out of this increasingly dangerous path."

Iran began producing 20 percent-enriched uranium in February 2010 after rejecting a U.S.-proposed arrangement under which Iran would ship out its LEU in return for fuel for the Tehran reactor. Iranian President Mahmoud Ahmadinejad said in September that Iran would halt 20 percent-enrichment activities if it received fuel for the reactor. (See *ACT*, October 2011.)

Iran began producing 20 percent-enriched uranium in February 2010 at a pilot facility also located at the Natanz site. Producing 20 percent-enriched uranium accomplishes about 90 percent of the work required to enrich uranium from natural levels to weapons grade.

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